

REMARKS

In view of the above amendments and following remarks, reconsideration and further examination are requested.

The specification and abstract have been reviewed and revised to make editorial changes thereto and generally improve the form thereof, and a substitute specification and abstract are provided. No new matter has been added by the substitute specification and abstract.

The instant invention pertains to a rotation angle detector that comprises a rotary member, a detecting member that is to rotate in conjunction with rotation of the rotary member, a cover having a shaft support for supporting a shaft portion of the detecting member for rotation, and a sensing device for detecting rotation of the detecting member. Such a rotation angle detector is generally known in the art as shown in Fig. 5 and described on pages 1-3 of the original specification.

A drawback associated with this conventional rotation angle detector is that because of the amount of the shaft portion that is surrounded by the shaft support, the shaft portion tends to show play or looseness during rotation thereof. This play or looseness causes undesirable rotational deflections of a magnet provided at a bottom end of the detecting member, which magnet forms part of a sensing device. These undesirable rotational deflections results in the conventional rotation angle detector having a problem in that errors are liable to be produced in a detected angle of rotation.

Applicants have addressed and resolved this drawback by designing a rotation angle detector wherein an amount of the shaft surrounded by the shaft support of the cover is greater than that as in the known rotation angle detector, whereby play or looseness is reduced, such that a more accurate measurement of an angle of rotation can be made. Additionally, because a greater axial amount of the shaft is supported by the shaft support, a load applied to an inner periphery of the shaft support is distributed over a greater surface area, thereby reducing wear of the inner periphery of the shaft support.

Specifically, with reference to Fig. 1, for example, by providing a recess 21C in detecting member 21, an axial length of shaft support 25B can be increased by extending the shaft support into the recess such that a greater axial length of shaft 22 is surrounded by the shaft support 25B, whereby a more stable rotation of detecting member 21 is realized such that rotational fluctuations of magnet 3 are reduced, and whereby wear of the inner periphery of the shaft support is reduced, as compared with the conventional rotation angle detector. Claim 1 is believed to be representative of Applicants' inventive rotation angle detector.

Claims 1-4 were rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants' admitted prior art as depicted in Fig. 5 in view of Chino et al. In rejecting claim 1 as being obvious over a combination of Applicants' admitted prior art and Chino et al., the Examiner recognized that the recess in the detecting member is lacking from Applicants' admitted prior art, and thus relied upon Chino et al. for concluding that it would have been obvious to provide the detecting member with a recess as claimed. This position is respectfully traversed for the following reasons.

Initially, it is respectfully submitted that there would have been no motivation or suggestion to have modified Applicants' admitted prior art in view of Chino et al. by providing a recess in detecting member 2. In this regard, the rotation detector of Chino et al. includes a recess 85 in kingpin 25A that accommodates sensor 51; however, Applicants' admitted prior art already includes a recess that incorporates therein part of a sensing device. That is, magnet 3, which forms part of sensing device 7, is received within a recess in a lower portion of detecting member 2. Thus, the recess 85 of Chino et al. already has a counterpart in Applicants' admitted prior art, i.e. the recess that accommodates magnet 3. Accordingly, Chino et al. would teach one having ordinary skill in the art nothing with regard to providing another recess in an upper portion of detecting member 2 of Applicants' admitted prior art.

Furthermore, assuming *arguendo* that one having ordinary skill in the art would have found it obvious to provide a recess in the upper portion of rotating member 2, it is respectfully submitted that claim 1 would remain allowable. In this regard, claim 1 does not merely require a recess, but rather requires that the shaft support extends into the recess. In addressing this claim limitation, the Examiner has taken the position that without any criticality attached thereto, whether the shaft support extends into the recess is considered to be an obvious modification of the shape of the cover of Applicants' admitted prior art.

However, that the shaft support extends into the recess is at the heart of Applicants' invention. In this regard, by having the shaft support extend into the recess, the shaft support is lengthened such that a greater axial length of the shaft of the detecting member is surrounded by the shaft support so as to limit looseness and play upon rotation thereof, and also to reduce wear of the inner periphery of the shaft support, as explained above. Thus, there is criticality attached to the shaft support extending into the recess.

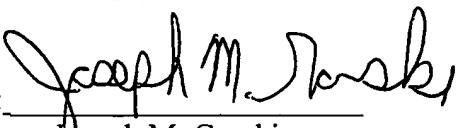
For these reasons claim 1 is allowable over a combination of Applicants' admitted prior art and Chino et al. Thus, claims 1-12 are allowable.

In view of the above amendments and remarks, it is respectfully submitted that the present application is in condition for allowance and an early Notice of Allowance is earnestly solicited.

If after reviewing this Amendment, the Examiner believes that any issues remain which must be resolved before the application can be passed to issue, the Examiner is invited to contact the Applicants' undersigned representative by telephone to resolve such issues.

Respectfully submitted,

Ichiro TATEISHI et al.

By: 

Joseph M. Gorski
Registration No. 46,500
Attorney for Applicants

JMG/abm
Washington, D.C. 20006-1021
Telephone (202) 721-8200
Facsimile (202) 721-8250
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